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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/646,126	08/22/2003	Jae Wook Yu	2060-3-47	8870

35884 7590 11/24/2008

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EXAMINER
LU, ZHIYU

ART UNIT	PAPER NUMBER
2618	

MAIL DATE	DELIVERY MODE
11/24/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/646,126	YU, JAE WOOK	
	Examiner	Art Unit	
	ZHIYU LU	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 August 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☒ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 08/25/2008 has been entered.

Priority

2. Should applicant desire to obtain the benefit of foreign priority under 35 U.S.C. 119(a)-(d) prior to declaration of an interference, a certified English translation of the foreign application must be submitted in reply to this action. 37 CFR 41.154(b) and 41.202(e).

Failure to provide a certified translation may result in no benefit being accorded for the non-English application.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1, 10-11 and 20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In claims 1, 10-11 and 20, applicant amended a limitation, "wherein the length of the guard period provided between the uplink and the downlink signal is variable with respect to a previous length of a guard period provided between a previous uplink and downlink signal". However, there is no support in the filed specification. There is nothing in the filed specification about either the length of the guard period being variable or being with respect to a previous length of a guard period. For examination purpose, the amended limitation is not considered.

Response to Arguments

4. Applicant's arguments filed 08/25/2008 have been fully considered but they are not persuasive.

Regarding the amended claims, applicant's argument with respect to the amended limitation is moot since there is no support found in the filed specification. For examination purpose, the amended limitation is not considered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Na (US Patent#6226276) in view of Soulabail et al. (US2002/0071415).

Regarding claim 1, Na discloses a mode switching method in a TDD mobile communication system (see title and abstract) comprising: providing a mode switching operation at common node (NC) i.e. start point by the switch (103 of fig. l) between transmission node (NTx) (i.e. uplink signal) and reception node (NRx) (i.e. downlink signal) of a transceiver (see fig.1 and col.4 lines 28-47);

setting and resetting the mode switching start point based on specific time interval provided between the reception and transmission signal (i.e. uplink signal and the downlink signal) (see fig.1,3 and col.5 lines 14-27,col.9 lines 8-37);

and starting mode switching by the switch (103 of Fig. l) at the mode switching common node (NC) start point (see fig.1,3 and col.9 lines 60-67).

(setting reception mode first 1 ms and resetting transmission mode next 1 ms, therefore setting and resetting transmission and reception based on specific guard time interval).But Na does not disclose explicitly guard period has variable length.

However, Soulabail teaches frame structure for cellular telecommunications system (same field of endeavor) wherein guard period is varied for downlink and uplink transmission

(i.e. setting/resetting mode switching start point based on a length of the guard period (guard period 66 and guard period 68 of fig.6 are different length) provided between uplink and downlink signal) (see Fig. 6 and para[0034]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the mode switching operation at common node (NC) i.e. start point by the switch between transmission node (NTx) and reception node (NRx) of a transceiver (as taught by Na) by incorporating teaching of variable length of guard period (66) and guard period (68 of fig.6) provided between uplink and downlink signal (as taught by Soulabail) to transmit/receive error free signal by including variable length of guard period for transmitting uplink and receiving downlink signal by the transceiver in a wireless communication system for the purpose of increasing cell size.

Regarding claim 2, as discussed above with respect to claim 1, Na discloses determining a mode switching time (MST) (i.e. mode switching time need 1 millisecond for transmission mode and 1 millisecond for reception mode) of the transceiver (see fig.1 and col.4 lines 27-55); and Soulabail further teaches determining a minimum guard period (68 of fig.6) of the transceiver between uplink and downlink slot (see Fig.6 and para[0046]); and characterized the MST for guard period (66 of fig.6) is longer than the than the minimum guard period (68 of fig. 6); and start mode switching uplink to downlink (see fig.6 and para [0017],[0020],[0036]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the mode switching operation at common node (NC) i.e. start point by the switch between transmission node (NTx) and reception node (NRx) of a transceiver (as taught by

Na) by incorporating teaching of reset mode of switching time is longer than minimum guard period (68 of fig.6) provided between uplink and downlink signal (as taught by Soulabail) to adjust the time for minimizing delay of transmission/reception signal in a wireless communication system.

Regarding claims 3, 4 and 5, as discussed above with respect to claim 1, Na discloses all the imitations except determining an advancing time offset based on a minimum guard period (GPmin) and shorter than minimum guard period; and setting the mode switching start point before a start point of the minimum guard period of the transceiver based on a mode switching signal; and determining a time deference between the advancing time offset and the start point of GPmin. However, Soulabail further teaches calculation of advance timing based on minimum guard period and advance time shorter than minimum guard period (see fig.6 and para[0034],[0035],[0046],[0047],[0048]); setting mode switching start point of the minimum guard period (68 of fig.6) of the transceiver; and determining a time deference between the advancing time offset and the start point of minimum guard period (68) (see fig.6 and para[0035]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the mode switching operation at common node (NC) i.e. start point by the switch between transmission node (NTx) and reception node (NRx) of a transceiver (as taught by Na) by incorporating teaching of advance offset time ,reset switching mode based on minimum guard period (68 of fig.6) and calculate between advance offset time and minimum guard period

(as taught by Soulabail) to adjust the time for minimizing delay of transmission/reception signal in a wireless communication system.

Regarding claims 6, 7, 8 and 9, as discussed above with respect to claim 2, Na further discloses performing mode switching based on the mode switching common node (NC) i.e. start point (see fig.l,3) but failed to disclose determining an advancing time offset shorter than the GPmin; and setting the mode switching start point before a start point of a minimum guard period of the system based on a mode switching signal and method of claim 6, wherein the mode switching start point is determined by determining the time difference between the advancing time offset and the start point of GPmin.

However, Soulabail teaches calculation of advance timing based on minimum guard period (see fig.6 and para[0047],[0048]); setting mode switching start point before the minimum guard period (68 of fig.6) of the transceiver; and determining a time deference between the advancing time offset and the start point of minimum guard period (68) (see fig.6 and para[0035]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the mode switching operation at common node (NC) i.e. start point by the switch between transmission node (NTx) and reception node (NRx) of a transceiver (as taught by Na) by incorporating teaching of advance offset time ,reset switching mode based on minimum guard period (68 of fig.6) and calculate between advance offset time and minimum guard period (as taught by Soulabail) to adjust the time for minimizing delay of transmission/reception signal in a wireless communication system.

Regarding claim 10, Na discloses a mode switching method in a TDD mobile communication system (see title and abstract) comprising: providing a mode switching operation at common node (NC) i.e. start point by the switch (103 of fig.l) between transmission node (NTx) (i.e. uplink signal) and reception node (NRx) (i.e. downlink signal) of a transceiver (see fig.1 and col.4 lines 28-47); and starting mode switching by the switch (103 of fig.l) at the mode switching common node (NC) start point (see fig.l,3 and col.9 lines 60-67); and Na further discloses determining a mode switching time (MST) (i.e. mode switching time need 1 millisecond for transmission mode and 1 millisecond for reception mode) of the transceiver (see fig.1 and col.4 lines 27-55).

But Na does not disclose explicitly for determining an advance time offset based on minimum guard period; setting mode switching start point of the minimum guard period of the transceiver; and MST is greater than the minimum guard period.

However, Soulabail teaches frame structure for cellular telecommunications system (same field of endeavor) and Soulabail teaches calculation of advance timing based on minimum guard period (see fig.6 and para[0047],[0048]); setting mode switching start point of the minimum guard period (68 of fig.6) of the transceiver; (see fig.6 and para[0035]); and Soulabail further teaches determining a minimum guard period (68 of fig.6) of the transceiver between uplink and downlink slot (see fig.6 and para[0046]); and characterized the MST for guard period (66 of fig.6) is longer than the than the minimum guard period (68 of fig. 6); and start mode switching uplink to downlink (see

fig.6 and para [0017],[0020],[0036]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the mode switching operation at common node (NC) i.e. start point by the switch between transmission node (NTx) and reception node (NRx) of a transceiver (as taught by Na) by incorporating teaching of reset mode of switching time is longer than minimum guard period (68 of fig.6) provided between uplink and downlink signal (as taught by Soulabail) to adjust the time for minimizing delay of transmission/reception signal in a wireless communication system.

Regarding claim 11, Na discloses a mode switching method in a TDD mobile communication system (see title and abstract) comprising: providing a mode switching operation at common node (NC) i.e. start point by the switch (103 of fig.l) between transmission node (NTx) (i.e. uplink signal) and reception node (NRx) (i.e. downlink signal) of a transceiver (see fig.1 and col.4 lines 28-47); setting and resetting the mode switching start point based on specific time interval provided between the reception and transmission signal (i.e. uplink signal and the downlink signal) (see fig.l,3 and col.5 lines 14-27,col.9 lines 8-37); and starting mode switching by the switch (103 of fig.l) at the mode switching common node (NC) start point (see fig.l,3 and col.9 lines 60-67). (setting reception mode first 1 ms and resetting transmission mode next 1 ms, therefore setting and resetting transmission and reception based on specific guard time interval).

But Na does not disclose explicitly guard period has variable length.

However, Soulabail teaches frame structure for cellular telecommunications system (same field of endeavor) wherein guard period is varied for downlink and uplink transmission (i.e.

setting/resetting mode switching start point based on a length of the guard period (guard period 66 and guard period 68 of fig.6 are different length) provided between uplink and downlink signal) (see fig. 6 and para[0034]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the mode switching operation at common node (NC) i.e. start point by the switch between transmission node (NTx) and reception node (NRx) of a transceiver (as taught by Na) by incorporating teaching of variable length of guard period (66) and guard period (68 of fig.6) provided between uplink and downlink signal (as taught by Soulabail) to transmit/receive error free signal by including variable length of guard period for transmitting uplink and receiving downlink signal by the transceiver in a wireless communication system for the purpose of increasing cell size.

Regarding claim 12, as discussed above with respect to claim 11, Na discloses determining a mode switching time (MST) (i.e. mode switching time need 1 millisecond for transmission mode and 1 millisecond for reception mode) of the transceiver (see fig.1 and col.4 lines 27-55); and Soulabail further teaches determining a minimum guard period (68 of fig.6) of the transceiver between uplink and downlink slot (see fig.6 and para[0046]); and characterized the MST for guard period (66 of fig.6) is longer than the than the minimum guard period (68 of fig. 6); and start mode switching uplink to downlink (see fig.6 and para [0017],[0020],[0036]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the mode switching operation at common node (NC) i.e. start point by the switch between transmission node (NTx) and reception node (NRx) of a transceiver (as taught by

Na) by incorporating teaching of reset mode of switching time is longer than minimum guard period (68 of fig.6) provided between uplink and downlink signal (as taught by Soulabail) to adjust the time for minimizing delay of transmission/reception signal in a wireless communication system.

Regarding claim 13, 14 and15, as discussed above with respect to claim 11, Na discloses all the imitations except determining an advancing time offset based on a minimum guard period (GPmin); and setting the mode switching start point before a start point of the minimum guard period of the transceiver based on a mode switching signal; and determining a time deference between the advancing time offset and the start point of GPmin. However, Soulabail further teaches calculation of advance timing based on minimum guard period and advance time shorter than minimum guard period (see fig.6 and para[0034],[0035],[0046],[0047],[0048]); setting mode switching start point of the minimum guard period (68 of fig.6) of the transceiver; and determining a time deference between the advancing time offset and the start point of minimum guard period (68) (see fig.6 and para[0035]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the mode switching operation at common node (NC) i.e. start point by the switch between transmission node (NTx) and reception node (NRx) of a transceiver (as taught by Na) by incorporating teaching of advance offset time ,reset switching mode based on minimum guard period (68 of fig.6) and calculate between advance offset time and minimum guard period (as taught by Soulabail) to adjust the time for minimizing delay of transmission/reception signal in a wireless communication system.

Regarding claim 16, 17, 18 and 19, as discussed above with respect to claim 11,12, Na further discloses performing mode switching based on the mode switching common node (NC) i.e. start point (see fig.1,3) but failed to disclose determining an advancing time offset shorter than the GPmin; and setting the mode switching start point before a start point of a minimum guard period of the system based on a mode switching signal and method of claim 6, wherein the mode switching start point is determined by determining the time difference between the advancing time offset and the start point of GPmin.

However, Soulabail teaches calculation of advance timing based on minimum guard period (see fig.6 and para[0047],[0048]); setting mode switching start point before the minimum guard period (68 of fig.6) of the transceiver ; and determining a time deference between the advancing time offset and the start point of minimum guard period (68) (see fig.6 and para[0035]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the mode switching operation at common node (NC) i.e. start point by the switch between transmission node (NTx) and reception node (NRx) of a transceiver (as taught by Na) by incorporating teaching of advance offset time ,reset switching mode based on minimum guard period (68 of fig.6) and calculate between advance offset time and minimum guard period (as taught by Soulabail) to adjust the time for minimizing delay of transmission/reception signal in a wireless communication system.

Regarding claim 20, Na discloses a mode switching method in a TDD mobile communication system (see title and abstract) comprising: providing a mode switching operation at common node (NC) i.e. start point by the switch (103 of fig.l) between transmission node (NTx) (i.e. uplink signal) and reception node (NRx) (i.e. downlink signal) of a transceiver (see fig.1 and col.4 lines 28-47); setting and resetting the mode switching start point based on specific time interval provided between the reception and transmission signal (i.e. uplink signal and the downlink signal) (see fig.l,3 and col.5 lines 14-27,col.9 lines 8-37);and determining a mode switching time (MST) (i.e. mode switching time need 1 millisecond for transmission mode and 1 millisecond for reception mode) of the transceiver (see fig.1 and col.4 lines 27-55).

But Na does not disclose explicitly for determining an advance time offset based on minimum guard period; setting mode switching start point of the minimum guard period of the transceiver; and MST is greater than the minimum guard period.

However, Soulabail teaches frame structure for cellular telecommunications system (same field of endeavor), and Soulabail further teaches calculation of advance timing based on minimum guard period (see fig.6 and para[0047],[0048]); setting mode switching start point of the minimum guard period (68 of fig.6) of the transceiver; and Soulabail furthermore teaches characterized the MST for guard period (66 of fig.6)is longer than the than the minimum guard period (68 of fig. 6); and start mode switching uplink to downlink (see fig.6 and para [0017],[0020],[0036]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the mode switching operation at common node (NC) i.e. start point by the switch between transmission node (NTx) and reception node (NRx) of a transceiver

(as taught by Na) by incorporating teaching of reset mode of switching time is longer than minimum guard period (68 of fig.6) provided between uplink and downlink signal (as taught by Soulabail) to adjust the time for minimizing delay of transmission/reception signal in a wireless communication system.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ZHIYU LU whose telephone number is (571)272-2837. The examiner can normally be reached on Weekdays: 9AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duc Nguyen can be reached on (571) 272-7503. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Zhiyu Lu/

Examiner, Art Unit 2618

/Z. L./
Examiner, Art Unit 2618
November 14, 2008

/Duc Nguyen/
Supervisory Patent Examiner, Art Unit 2618